We claim:

1. An electronic device adapted to received a solution comprising:

a substrate;

a plurality of selectively addressable electrodes on the substrate; and

a permeation layer adjacent the electrodes, the permeation layer being a sol-gel composition; and

an electric source for selectively addressing the electrodes.

2. The electronic device of claim 1 wherein the sol-gel composition is comprised of silicon dioxide.

3. The electronic device of claim 2 wherein the silicon dioxide sol-gel composition is formed from tetraethyl orthosilicate, ethanol, de-ionized water, hydrochloric acid and a surfactant.

4. The electronic device of claim 3 wherein the surfactant is cetyltrimethylammonium bromide.

5. The electronic device of claim 3 wherein the concentration of the surfactant is selected from 1 weight percent to 5 weight percent to generate a predetermined pore size in the sol-gel.

6. The electronic device of claim 1 further comprising:

an attachment layer adjacent the permeation layer and having selective binding properties for specific binding entities.

7. The electronic device of claim 1 further comprising:

an attachment layer integral with the permeation layer and having selective binding properties for specific binding entities.

8. An electronic device adapted to receive a solution comprising:

a substrate;

a plurality of selectively addressable electrodes on the substrate; and

a permeation layer adjacent the electrodes, the permeation layer being a silicon dioxide composition.

9. The electronic device of claim 8 wherein the silicon dioxide composition is formed from tetraethyl orthosilicate, ethanol, de-ionized water, hydrochloric acid and a surfactant.

10. The electronic device of claim 9 wherein the surfactant is cetyltrimethylammonium bromide.

11. The electronic device of claim 9 wherein the concentration of the surfactant is selected from 1 weight percent to 5 weight percent to generate a predetermined pore size in the silicon dioxide composition.

12. The electronic device of claim 8 further comprising:

an attachment layer adjacent the permeation layer with selective binding properties for specific binding entities.

13. The electronic device of claim 8 further comprising:

an attachment layer integral with the permeation layer and having selective binding properties for specific binding entities.

14. A method for forming an electronic device adapted to receive a solution comprising:

providing a substrate;

locating a plurality of selectively addressable electrodes on the substrate; and

forming a permeation layer adjacent the electrodes, the permeation layer being a sol-gel composition.

15. The method of claim 14 wherein the sol-gel composition is comprised of silicon dioxide.

16. The method of claim 15 wherein the silicon dioxide sol-gel composition is formed from tetraethyl orthosilicate, ethanol, de-ionized water, hydrochloric acid and a surfactant.

17. The method of claim 16 wherein the surfactant is cetyltrimethylammonium bromide.

18. The method of claim 16 wherein the concentration of the surfactant is selected from 1 weight percent to 5 weight percent to generate a predetermined pore size in the sol-gel.

19. The method of claim 14 further comprising:

forming an attachment layer adjacent the permeation layer with selective binding properties for specific binding entities.

20. A method of forming a permeation layer for use on an electronic device comprising:

mixing tetraethylorthosilicate, an alcohol, water and an acid to form a stock solution;

mixing the stock solution with additional water and additional acid;

adding additional alcohol;

adding a surfactant to form a sol-gel solution;

depositing the sol-gel solution on a substrate;

spinning the substrate; and

heating the substrate.

21. The method of claim 20 wherein the surfactant is cetyltrimethylammonium bromide, the acid is hydrochloric acid and the alcohol is ethanol.

22. The method of claim 21 wherein the final molar ratio is tetraethylorthosilicate = about 1.0, water = about 0.0 to about 40.0, ethanol = about 0.0 to about 40.0 and hydrochloric acid = about 0.0001 to about 0.1.

23. The method of claim 20 wherein the weight percent of the surfactant is from 1 weight percent to 5 weight percent.

24. The method of claim 20 wherein the amount of surfactant is varied to vary the pore size in the permeation layer.